



Donald L. Stephens, Jr.
 Application No. 09/866,570 Filed May 25, 2001
 Our Ref. No. 4630-59094
 Art Unit: 1652
 For: TRANSACYLASES OF THE PACLITAXEL
 BIOSYNTHETIC PATHWAY
 Inventor(s): Croteau et al.

FROM PEPTIDE FRAGMENT SEQUENCE 2

NH2-	I	L	V	Y	Y	P	P	-COOH	(Residues 1-7 of SEQ ID NO: 30)
5'	ATI	CTI	GTI	TAT	TAT	CCI	CC	3'	AT-FOR1 (SEQ ID NO: 34)
	T		C	C	C	C			
			A			A			

NH2-	Y	Y	P	P	F	A	G	-COOH	(Residues 4-10 of SEQ ID NO: 30)
5'	TAT	TAT	CCI	CCI	TTT	GCI	GG	3'	AT-FOR2 (SEQ ID NO: 35)
	C	C	C	C	C	C			
			A	A		A			

FROM SEQUENCE HOMOLOGY CONSIDERATIONS

NH2-	F	Y	P	F	A	G	R	-COOH	(SEQ ID NO: 39)
5'	TTC	TAT	CCI	TTC	GCI	GGI	AG	3'	AT-FOR3 (SEQ ID NO: 36)
	T	C		T	C	C			
				A	A				

NH2-	Y	Y	P	L	A	G	R	-COOH	(SEQ ID NO: 40)
5'	TAC	TAT	CCI	TTI	GCI	GGI	AG	3'	AT-FOR4 (SEQ ID NO: 37)
	T	C		C	C	C	C		
				A	A				

NH2-	D	F	G	W	G	K	P	-COOH	(SEQ ID NO: 41)
3'	CTA	AAA	CCI	ACC	CCI	TTT	GG	5'	AT-REV1 (SEQ ID NO: 38)
	G	G	C		C	C			
			A		A				

FIG. 4

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FIG. 6A

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TAX1 (SEQ ID NO: 28)
TAX2 (SEQ ID NO: 26)
aab61522 (SEQ ID NO: 59)
aab61523 (SEQ ID NO: 62)
aab95283 (SEQ ID NO: 63)
aab97723 (SEQ ID NO: 64)
aac17079 (SEQ ID NO: 65) VKCWNTCIRSGDSEGPIINIRRFQRIAWQIEGIQVT
aac18062 (SEQ ID NO: 66)
aac27152 (SEQ ID NO: 67)
aac99311 (SEQ ID NO: 68)
aad12025 (SEQ ID NO: 69)
caa20531 (SEQ ID NO: 70)
caa64636 (SEQ ID NO: 71)
caa94432 (SEQ ID NO: 72)
cab06427 (SEQ ID NO: 73)
cab10318 (SEQ ID NO: 74)
cab10319 (SEQ ID NO: 60)
cab40761 (SEQ ID NO: 61)

FIG. 6B

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23	TAX1 (SEQ ID NO: 28)	MEKTDLHYNLIKEKVMVGPPSPPL
21	TAX2 (SEQ ID NO: 26)	MGRFNYDMIERVIVAPCLQS
21	aab61522 (SEQ ID NO: 59)	0
22	aab61523 (SEQ ID NO: 62)	MEKNVETILSREIIVKESSPTE
22	aab95283 (SEQ ID NO: 63)	DD
25	aab97723 (SEQ ID NO: 64)	MPSLEKSYTIISSRNRFEDQKST
37	aac17079 (SEQ ID NO: 65)	LV
147	aac18062 (SEQ ID NO: 66)	MASCTIQELHFTHLHIFPYTINQQFLVHPSSPTEANQSQ
20	aac27152 (SEQ ID NO: 67)	37
34	aac99311 (SEQ ID NO: 68)	MASCTIQELHFTHLHIFPYTINQQFLVHPSSPTEANQSQ
27	aad12025 (SEQ ID NO: 69)	20
29	caa20531 (SEQ ID NO: 70)	MNGKISVETETLSKTLIKESSPTE
20	caa64636 (SEQ ID NO: 71)	29
28	caa94432 (SEQ ID NO: 72)	MAPITFRKSYTIVPAEPTE
21	cab06427 (SEQ ID NO: 73)	20
19	cab10318 (SEQ ID NO: 74)	MANQRKPTLPLLKKPVELVKPSKHTHC
25	cab10319 (SEQ ID NO: 60)	28
22		MDSKQSSSELVFTYRRQKPELIAPEAKPT
21		MDSKQSSSELVFTYRRQKPELIAPEAKPT
19		MSIQIKQSTMVRPAEEZ
25		DEFSFHYRKCQPELIAPEAKPT
22		MSIQIKQSTMVRPAEEZ
22		METMTMKYETISKEIIKESSPTE
22		NN
23		MEAKLEVVTGKEVIKAPSSP
		RD
		cab40761 (SEQ ID NO: 61)

cab40761 (SEQ ID NO: 61) MPMI M A T R I D I O K E N V Y P R F Q N 23

FIG. 6C

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TAX1 (SEQ ID NO: 28)	KTTQLSSIDNLPGVRGSIFNALLIYNASPPSPTMISADP	AKPI 66
TAX2 (SEQ ID NO: 26)	KNILHLSPIDNKT	AKTI 60
aab61522 (SEQ ID NO: 59)	0
aab61523 (SEQ ID NO: 62)	KRINNLQILSSPMYTGALLFYAADPQNLGFSSTEET	SLKL 65
aab95283 (SEQ ID NO: 63)	DLKESVSDLPMLSCHYIQKGCLEFTCPN	ISHL 62
aab97723 (SEQ ID NO: 64)	HHSLYLSNLDDIIGARVFTPSVYFYPSTNNRESFV	LKRL 76
aac17079 (SEQ ID NO: 65)	W . . LPLSNLDPLLLPPLNVHVCECYKKP	YETL 184
aac18062 (SEQ ID NO: 66)	LQKLNLSLDPQIQIPFYVGLIFHY	LSKL 58
aac27152 (SEQ ID NO: 67)	RKSMFELSNVDPQILN	SEKL 72
aac99311 (SEQ ID NO: 68)	LSRYNLSYNDQNIYQTCVSVGFYENPDGIEISTIRE	QI 66
aad12025 (SEQ ID NO: 69)	GRFPPLAEWDQV . . GTITHIPIPLYFYDKPSESFGGNV	VEIL 58
caa20531 (SEQ ID NO: 70)	ETLSSLTLDPNEVVMYATIYVFKANGKNLD	VSLL 67
caa64636 (SEQ ID NO: 71)	RETKEFLSDIDDDQEGLR	VKVI 68
caa94432 (SEQ ID NO: 72)	YEFKQLSDVDDQQLR	VKVI 61
cab06427 (SEQ ID NO: 73)	KSSLWLSNIDMILRTPYSHTGAVALIYKQPDNN . EDNIHPSSSSMYFDANIL	67
cab10318 (SEQ ID NO: 74)	LQTEQLSIIYDHILPPVYTVAFLFYTKNDL	SHKL 64
cab10319 (SEQ ID NO: 60)	R . . LQKLSILDLYCPGIYVSTIFFY	SENL 58
cab40761 (SEQ ID NO: 61)	HDKKKLIITLSNLDRCPLLMYSVFFYKNTTRDFDSV	FSNL 64

FIG. 6D

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FIG. 6E

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TAX1 (SEQ ID NO: 28) LGD . FDDSNPSEQ . QLIESLPLDTNF KDLSSLVVGVTRETCG . GE 156
TAX2 (SEQ ID NO: 26) ZQD . FNEYDPPSEQ . QLVENLREDVNI EDLHLLTVGVTRETCG . GE 150
aab61522 (SEQ ID NO: 59) ILEN . PNP . ELNKLHPEEEHEVSDVP LTVQLTFFEEGG . GL 41
aab61523 (SEQ ID NO: 62) FLKC . PVPE . SLELLIP VTNPVLIGANFEESEGG . GL 149
aab95283 (SEQ ID NO: 63) VTAGIDVFD . VVKEEFTYDR . AVSYE GHNRPIHLAVQYTELN . . DGY 153
aab97723 (SEQ ID NO: 64) LGD . TV2NPAWLPLIFRNPGEEAYKI LEMPLAIAQYTFETCG . GE 169
aac17079 (SEQ ID NO: 65) INLY . DPDE . SIAKLVPIKKHG VIAIQYQQLKCGG . SI 266
aac18062 (SEQ ID NO: 66) FLG . EESN . NL DLLVGIL SGFLSE TETPZPAATQLNMEKCGG . GL 144
aac27152 (SEQ ID NO: 67) LGD . LVYPNPAFAQLVTSCLO . SLPKD DQEPLFVFQITSEKCGG . GE 163
aac99311 (SEQ ID NO: 68) ILKY . ELRS . YARDLVLPLKRVTVGSED TTA IVOLSHEDCG . GL 150
aad12025 (SEQ ID NO: 69) FKD . FS . PTPEFENL . PQVNYYKNNPIE TIEFLAQYTKKTCGG . GI 147
caa20531 (SEQ ID NO: 70) LN YIENLDDQVALRLVPEIEIDYESNVVCYH INCEPLLLIQYTRLRCG . GE 180
caa64636 (SEQ ID NO: 71) FGDELQPPFCLE . ELLYDVPDSAGV INCEPLLLIQYTRLRCG . GE 159
caa94432 (SEQ ID NO: 72) FWDTLPYSSLSSMQNNIHNALNSDEV LNSPLLLIQYTRLRCG . GE 153
cab06427 (SEQ ID NO: 73) FGD . FR . PNDDELHRVMVPTCDYSKGIS SEEPLLMVQLTRETCG . GV 156
cab10318 (SEQ ID NO: 74) FLKC . PDDFD . ALOQOLPLDVVVDNPYVA AATWPLLLVVKATYEGGG . GM 152
cab10319 (SEQ ID NO: 60) FLRN . LNTD . SLSGFLPTLAAGE . . S . . PAAWELLSVKVTEEEGGSSGV 143
cab40761 (SEQ ID NO: 61) LGDLTQYNEEFYENLVYKPSLDGDFSV MELVVAQYVEREACG . GV 156

FIG. 6F

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TAX1 (SEQ ID NO: 28) VVGVVFHGGVCDGRRGAAQELKGL&EMAS . GEVKLS LEPIW 195
 TAX2 (SEQ ID NO: 26) VVGVTRFHSSVSDGKIGQQLKGGM&EMAS . GEEFKPS LEPIW 189
 aab61522 (SEQ ID NO: 59) ALGIGLSSKLCDALSGLIEVNSKAAFF&GQTDE IITPSE 80
 aab61523 (SEQ ID NO: 62) VITICVSSKITTATSLAMEIRGKWAESSRG GITLIPSE 187
 aab95283 (SEQ ID NO: 63) FIGGSVNVN&AVTDTGTSLWN&INT&EVSS&GAKNVT RQPDEFTRESVL 198
 aab97723 (SEQ ID NO: 64) SLGIGRLCHCICDGF&GAMQELGSSWAAT&KTGKLIA PEPVW 209
 aac17079 (SEQ ID NO: 65) VVGGCTFD&HRVADAYSMNNMELLSSWAEISS&DVPI SCV . . PSE 305
 aac18062 (SEQ ID NO: 66) VIGAQFN&IIGDME&TMSTMNSW&KAC&VGIKE VAHZTF 183
 aac27152 (SEQ ID NO: 67) AMGISTN&TTF&G&LSF&KT&E&L&N&A&S&LLH . EKPLS TPPCN 201
 aac99311 (SEQ ID NO: 68) AVAFGIGSSKVA&DGGTIA&S&W&KDW&AS&ACYLSSS HHVPT&ZLL 191
 aad12025 (SEQ ID NO: 69) SLSVNVSS&H&A&I&V&D&G&Q&S&AL&L&I&S&E&W&G&R&L&A . GEPLE TVZFL 185
 caa20531 (SEQ ID NO: 70) TIGTALTHAVCDG&YGV&Q&I&H&A&L&T&L&A . AGKTEPS VKS&VW 199
 caa64636 (SEQ ID NO: 71) IFA&L&R&LN&ATMSD&A&P&G&L&V&Q&E&M&T&A&V&G&E&M&A&R . GGSAPS ILE&VW 198
 caa94432 (SEQ ID NO: 72) IFGGLCFN&TM&AD&G&F&G&I&V&Q&E&M&K&A&T&E&I&R . GAFAPS ILE&VW 192
 cab06427 (SEQ ID NO: 73) SIGFAQH&HVC&D&G&M&A&H&F&E&N&S&W&R&I&A&K . GLLPA LEPVH 194
 cab10318 (SEQ ID NO: 74) AIGICIT&KIA&A&S&I&S&T&E&I&R&S&A&T&A&R&G&E&N&D&A AAMES&VF 193
 cab10319 (SEQ ID NO: 60) AVSVSV&KICD&IASLVT&VKD&T&TAKGKSN STIE . . F 181
 cab40761 (SEQ ID NO: 61) SIGTSS&SLF&G&IS&AY&E&I&H&A&S&N&SH&N&K&S&N&SKITN&K&E&D&V&V&I&K&E&V&H 206

FIG. 6G

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TAX1 (SEQ ID NO: 28) NRELVKLD . . . DP . . . KYLQFFH . . . EFLRAP . . . SIV . . . EKIVQ 227
TAX2 (SEQ ID NO: 26) NREMVKPE . . . DI . . . MYLQFDH . . . DFIHPP . . . LNL . . . ERSIQ 221
aab61522 (SEQ ID NO: 59) DLAKMFPPCDIEN LNMMATGITE NIVT 107
aab61523 (SEQ ID NO: 62) TASEVFPKPLDEL PSKPMDRKEEVEEMS CVT 218
aab95283 (SEQ ID NO: 63) ISPAVLKVPOGGPKVTFDENAPLRLERIESFSRESIQELKAVVNKK 243
aab97723 (SEQ ID NO: 64) DRETEKPR . . . NP . . . PMVKYPH . . . EYLPIEERSNLTNSLWD . . . TKPLQ 249
aac17079 (SEQ ID NO: 65) RSSILNPRRPLVMDPSIDQIYMPVTSILPPQETTNPENLLAS 347
aac18062 (SEQ ID NO: 66) GLAPLMPSAKVIN IPPPPSSFEG VKFVS 210
aac27152 (SEQ ID NO: 67) DRTLKKARDPPS VAFPH EIL VKEQDCETTVFEATSEHLD 242
aac99311 (SEQ ID NO: 68) VSDSSTFPRQDNIT CEQFPTSK NCVE 216
aad12025 (SEQ ID NO: 69) DDKILWAGEPLPPFEVSPPKFDHK EEDQPPFLIGETDNVEERKKKTIV 232
caa20531 (SEQ ID NO: 70) QERLVLGKIDNKP GKVPGSHI D GFLATSAYLPT TDVVT 237
caa64636 (SEQ ID NO: 71) CRELLNAR . . . NP . . . PQVTCTH EYDEVRTKGTIIPL DDMVH 236
caa94432 (SEQ ID NO: 72) QRALLTAR . . . DP . . . PRITFRH EYDQVVDMKSGLIPV NSKID 230
cab06427 (SEQ ID NO: 73) DRYLHLRPRNPPQI KYSHS . . . QFE PEVPSLPPNELLDGKTNKSQ 235
cab10318 (SEQ ID NO: 74) AGANEYPPANEAF KLPADEQAGKRS SIT 221
cab10319 (SEQ ID NO: 60) AETTIYPPPPSSHM YEQEPSTDSDSNTSKYVL 213
cab40761 (SEQ ID NO: 61) DRRNLLVNRDAVRETNAAAICHLYQLIKQAMMTYQEQRNRLNLELPDSGFV 258

FIG. 6H

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TAX1 (SEQ ID NO: 28) TY~~E~~IIDFET~~I~~NYIKQSV. MEEC.
 TAX2 (SEQ ID NO: 26) ASMVISSFER~~I~~YIKRCM. MEEC.
 aab61522 (SEQ ID NO: 59) R~~E~~VFLRSS~~V~~ERFSGNK.
 aab61523 (SEQ ID NO: 62) K~~E~~VEDASKE~~K~~K~~L~~RAK. ASRN.
 aab95283 (SEQ ID NO: 63) K~~W~~LTV~~D~~NGE~~I~~DGVELLGKQSNDKLN~~G~~KENG~~I~~TEMLES~~L~~FG~~R~~ND~~G~~
 aab97723 (SEQ ID NO: 64) K~~C~~YRISKEFQCRV~~K~~STIA. QGED.
 aac17079 (SEQ ID NO: 65) R~~I~~YYIKANALQELQTLASSSKN.
 aac18062 (SEQ ID NO: 66) K~~R~~EVENNA~~I~~TR~~L~~RKEATEEDGDGDD.
 aac27152 (SEQ ID NO: 67) K~~I~~EKLSSSEQ~~I~~KK~~L~~KERA. SET.
 aac99311 (SEQ ID NO: 68) K~~T~~~~E~~IPPEA~~I~~E~~K~~~~L~~SKAVEFG.
 aad12025 (SEQ ID NO: 69) V~~M~~LPLSTS~~Q~~LQK~~L~~RSKANGSKH.
 caa20531 (SEQ ID NO: 70) ETINIRAGDIKRLKDSM. MKEC.
 caa64636 (SEQ ID NO: 71) K~~S~~~~E~~FFGPSEV~~S~~ALRREV. PHHL.
 caa94432 (SEQ ID NO: 72) QL~~E~~FFSQLQ~~I~~STLRQ~~T~~L. PAHL.
 cab06427 (SEQ ID NO: 73) T~~L~~~~E~~ITL~~S~~REQ~~I~~NT~~L~~KQKLDSLNN.
 cab10318 (SEQ ID NO: 74) K~~R~~~~E~~VFEASKV~~E~~DLRTKAASEE.
 cab10319 (SEQ ID NO: 60) K~~R~~~~E~~VEEPSKIAE~~E~~KKKAASES.
 cab40761 (SEQ ID NO: 61) K~~T~~~~E~~ELNGDATESMKKKSSEG.

FIG. 6I

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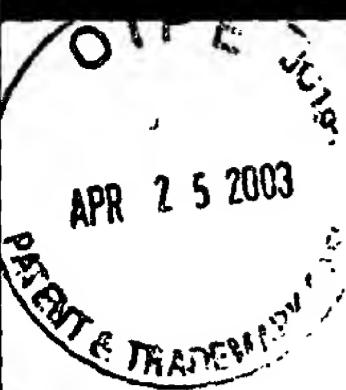
TAX1 (SEQ ID NO: 28) . CS . . SEEVASAMTWIARTRAFQIPESEY VKILFGMDMMNSSEN 291
TAX2 (SEQ ID NO: 26) . FS . . AFEVVVVALIWLARTKSERRIPPNAY VKIIIFPIDMMRNSFD 285
aab61522 (SEQ ID NO: 59) RVE . . . VLSVFIWSRE . . MASTNNHDDKTKIYT LIHPYVNLLBROAD 173
aab61523 (SEQ ID NO: 62) RVE . . . AVTALFWRCV . . TKVSRLSSLTPTRSV LQIILYNLB GKVD 284
aab95283 (SEQ ID NO: 63) AVEISSEQSLCALLEWBAITRARKLPSSKTT FTMAYNCBHBLS 336
aab97723 (SEQ ID NO: 64) VCS . . TFDAMAAHIIYRSWVKALDVKPLDYN LRLTFSYNNVATRLE 315
aac17079 (SEQ ID NO: 65) KLE . . . SFSSAFLWKLVAEHAAKDPVPIKTSK LGIVVYDGGRRLM 413
aac18062 (SEQ ID NO: 66) RVD . . . LVTAFLSKSLIEMDCAKKEQTKSRPSL MVHMMNLAKETK 286
aac27152 (SEQ ID NO: 67) NVRVTGENVVTALVWCKALSVAEEGEET . . NLERESTILYAYDIREGBL . 313
aac99311 (SEQ ID NO: 68) RVE . . . VLTAFLSRBCATVAGKSAAKNNNGQSLPEPVQLQAINLRPILE 287
aad12025 (SEQ ID NO: 69) AKGFTTRYETVTGHVWACKKARGHSPEQPT . AL GICIDT&SEBM . 299
caa20531 (SEQ ID NO: 70) KESFTTYEVLLSSYIWKLRSRALKLNPDGIT V . LGVAVGIGRHVLD 304
caa64636 (SEQ ID NO: 71) . CS . . TFEELLTAVLLWCCRMTMSLKPDPEEE VRALCIYNAARSFNFN 299
caa94432 (SEQ ID NO: 72) . CP . . SEEVLTA YVWWR LRTIALQFKPPEEE VRFILCVMMNLRSKID 293
cab06427 (SEQ ID NO: 73) . . LSTYEVVAAHVWRSVSKARGLSDHEET . KL IMPVYDGSSBIBN 300
cab10318 (SEQ ID NO: 74) RVE . . . SVTALIWWKCF . . VASSK . . TTTCDHKV LVQLANLRSKIP 286
cab10319 (SEQ ID NO: 60) RVE . . . AIMS LIWWRC A . . RNSSSRSNLLIPRQAV MWQAMDIRLRI P 279
cab40761 (SEQ ID NO: 61) . FMCSSEEEFLAAHLWKAARTALGLRRDA MVCLQFAVDIRKRT E 318

FIG. 6J

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TAX1 (SEQ ID NO: 28) P. P_LP S_G G_Y G_N S_IG_T A C A V D N V Q D . . L S G . S L L R A I M I K K S S V S L . . 334
TAX2 (SEQ ID NO: 26) S. P_LE P K G_Y G_N A I G N A C A M D N V K D . . L L N G . S L L Y A L M L I K K S S K F A L . . 328
aab61522 (SEQ ID NO: 59) P. D I P D N N E G N I M R F S V T V P M M I I N . . E N D E E K A S L V D Q M R E E I R K I . . 217
aab61523 (SEQ ID NO: 62) S. . L C E N T I G N . M L S L M I . . L K N E E . . A A I E R I Q D V V D E I R R A K E E I F . . 324
aab95283 (SEQ ID NO: 63) P. K I N P E Y E G N A I Q S V P T F A T A A E V L S R D L K W C . . 368
aab97723 (SEQ ID NO: 64) T L K L R K G F Y G N V V C L A C A M S S V E S . . L I N D . S L S K T T R L V Q D A R L R V . . 359
aac17079 (SEQ ID NO: 65) E. K E N N T Y F G N V L S V P F G G Q R I D D L I S K P L S W V T T E V H R F L K K . . 455
aac18062 (SEQ ID NO: 66) L. A L E N D V S G N F F E S K I T V A P K I T D I T E S L G S A . . 323
aac27152 (SEQ ID NO: 67) N P E L P P S Y T G N A V L T A Y A K E K C K A . . L L E E . P F G R I V E M V G E G S K R I . . 357
aac99311 (SEQ ID NO: 68) . . L P Q N S V G N L V S I Y F S R T I K E N D Y L N E K E Y T K L V I N E L R K E K Q K I . . 331
aad12025 (SEQ ID NO: 69) E P P L P R G Y F G N A T L D V V A A S T S G E . . L I S N . E L G F A A S L I S K A I K N V . . 343
caa20531 (SEQ ID NO: 70) P. P_LP K G_Y G_N A Y I D V V V E L T V R E . . L E E S . S I S N I A N R V K K A K K T A Y E K . . 350
caa64636 (SEQ ID NO: 71) P. P_LP T G Y Y G N A F A F P V A V T A A K . . L S K N . P L G Y A L E L Y K K T S D V . . 342
caa94432 (SEQ ID NO: 72) I. P_L . . G Y Y G N A V V V P A V I T T A A K . . L C G N . P L G Y A V D L I R K A K A . . 334
cab06427 (SEQ ID NO: 73) N P S L E P K G Y C G N V V F L A V C T A T V G D . . L S C N . P L T D T A G K V Q E A L K G L . . 344
cab10318 (SEQ ID NO: 74) S. L D Q E S S I G N L M F S S V V . . L S I G R . . G G E V K I E A V R D L R K K E E L . . 328
cab10319 (SEQ ID NO: 60) S. S V A P K D V I G N L Q S G F S . . L K K D A . . E S E F E I P E I V A T F R K N K E R V . . 321
cab40761 (SEQ ID NO: 61) T. P L P E G F S G N A Y V L A S V A S T A R E . . L L E E L T L E S I V N K I R E A K K S I . . 362

FIG. 6K

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Donald L. Stephens, Jr.
Application No. 09/866,570 Filed: May 25, 2001
Our Ref. No. 4630-59094
Art Unit: 1652
For: TRANSACYLASES OF THE PACLITAXEL
BIOSYNTHETIC PATHWAY
Inventor(s): Croteau et al.

FIG. 6L

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→
TAX1 (SEQ ID NO: 28) G . E D E V D E G W G N A V S V S P V Q Q Q S . . A L A M Q N Y F L K P S K N K P D G I K I L M 414
TAX2 (SEQ ID NO: 26) G . E Y E A D E G W G N A V N V S P M Q Q Q R E H E L A M Q N Y F L R S A K N M I D G I K I L M 410
aab61522 (SEQ ID NO: 59) P V Y . E A D E G W G K P L W V A S A R M S . Y K N L . . V A F I D T K E G D G I E A W I 300
aab61523 (SEQ ID NO: 62) G L Y . D A D E G W G K P Y W V T G R G T S H E F K N L . . M L L I D T K D G E G I E A W I 408
aab95283 (SEQ ID NO: 63) P M Y . D N D E G W G R P Y A V R S G R S N K F D G K I S A . F P G R E G N G T V D I E V 459
aab97723 (SEQ ID NO: 64) E M Y E T A D E G W G K P Y Y A G P I . . D L R P T P Q V C V L L P Q G G V E S G N D Q S M V V C L 441
aac17079 (SEQ ID NO: 65) P V N . Q V D E G W G S P Y F G S Y H F P W G G S A G Y V M P M P S S V D D R D W M V Y L 544
aac18062 (SEQ ID NO: 66) P L Y . E V D E G W G I P S L V D T T A V P F . . G L I V L M D E A P A G D G I A V R A 412
aac27152 (SEQ ID NO: 67) G . F A E V E Y P W G K P K Y S C P V V Y H R K D I V I L L E P D I D G D S K G V Y V L A 431
aac99311 (SEQ ID NO: 68) P F Y . D V D E G W G K P I W V . C L F Q Q P Y I K N C V V M M D Y P F G D D Y G I E A I V 417
aad12025 (SEQ ID NO: 69) P . M Y G L D E G W G K P E F Y T G P G T H D F D G D S L I L P D Q N E D G . S V I L A T 433
caa20531 (SEQ ID NO: 70) G W F G S M D E G W N N E P Y N L R P L . T Q R E S T V H V G M I L K P S K S D P S M E G G V K V I M 435
caa64636 (SEQ ID NO: 71) G . F G E V D E G W G K A Y Y G G P A K G G V G A I P G V A S F Y I P F K . N K K G E N G I V V P I 424
caa94432 (SEQ ID NO: 72) G . V E N V D E G W G K A I E G G P T T G A R I T R G L V S E F C V P E M . N R N G E K G T A L S L 416
cab06427 (SEQ ID NO: 73) P . Y Q A M D E G W G S P T E F G I S N I E Y D G Q C F F L I P S R D G D G . S M T I L A I 428
cab10318 (SEQ ID NO: 74) P L Y . E A S E G W D S P E V W V V G N V S S P V L G N L . . A M L I D S K D G Q G I E A F V 418
cab10319 (SEQ ID NO: 60) P F Y . E V D E G S G S P Y W V G Y A S H T I Y D N M V G V V L I D S K E G D G V E A W I 407
cab40761 (SEQ ID NO: 61) P . F H N V G E G G N G G E P A D Y M A P L C P P V P Q V A Y F M K N P K D A K G V L V R I 441

FIG. 6M

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440
aab61522 (SEQ ID NO: 59) NLDQNDMSREADEELLRYVSSNPSVMVSVS . . .
aab61523 (SEQ ID NO: 62) TLTTEEQMSSLTECDQELLESASLNNPPVLI . . .
aab95283 (SEQ ID NO: 63) VLSPETMAGIESDGEFMYRYVTNK . . .
aab97723 (SEQ ID NO: 64) CLPPTAVHTEFLRLLSNDHK . . .
aac17079 (SEQ ID NO: 65) HLTKGQIREFIEEASHVLUKPIIDNDYLIK . . .
aac18062 (SEQ ID NO: 66) CLSEHDMIQEQHQHQQLLSYVS . . .
aac27152 (SEQ ID NO: 67) ALPSKEMSKEQHWWFEDTLC . . .
aac99311 (SEQ ID NO: 68) SFEQEKMSAEKNEQLLQFVSN . . .
aad12025 (SEQ ID NO: 69) CLQVAHMEAFKHEFYEDI . . .
caa20531 (SEQ ID NO: 70) KEPDRDAMVEEKREMATMKKLYFGEDTN . . .
caa64636 (SEQ ID NO: 71) CLPGFAMETEVKELDGMLKVDAPL . . .
caa94432 (SEQ ID NO: 72) CLPPPAMERTRANVHASLQVKQVVDAVDSHMQTIQSASK . . .
cab06427 (SEQ ID NO: 73) NLESSHLSREKKEYDFE . . .
cab10318 (SEQ ID NO: 74) TAPEENMSSSEQNPPELLAFATMNPSPVLU . . .
cab10319 (SEQ ID NO: 60) SLPEEDMSVFFVDDQELLAYAVLNPPVVA . . .
cab40761 (SEQ ID NO: 61) GLDPRDVNGTSNNHFLDC . . .
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FIG. 6N

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